REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 3, 5-6, 17-18, 22, 24-29 and 31 are requested to be cancelled.

Claims 1, 4, 9, 11, 13, 16, 19, 21 and 23 are currently being amended.

Claims 33-42 are being added.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1, 4, 8-16, 19-21, 23, 30 and 32-42 are now pending in this application.

Claim Objections

Claim 16 was objected to for informalities. Applicants have amended claim 16 as required by the Examiner.

Claim Rejections under 35 USC 103

Claims 1, 3-6, 8, 13 and 14

On page 2 of the Office Action, claims 1, 3-6, 8, 13 and 14 were rejected under 35 USC 103(a) as being unpatentable over US Patent No. 5,706,111 (Morales) in view of US Patent No. 6,519,865 (Takai) and US Publication No. 2003/0231382 (Ahn).

The Examiner stated that:

> With regard to claim 1, Morales et al discloses an optical data transmission system (e.g., Figures 2 and 3) … a kerb location (the access node AN in Figure 2) … an optical router (the multiplexer in the AN and the optical access board OAB…) … wherein the kerb location includes a plurality of optical wavelength converters (Figure 2, converter in OAB) configured to form data modulated transmission light (column 5, lines 17-32)….

However, the Examiner acknowledged on page 3 of the Office Action, that Morales does not disclose:

> wherein the kerb location includes a plurality of optically pumped sources configured to form data modulated transmission light, and the conversion being performed without any intermediate conversion to or from electrical signal.

However, the Examiner further stated that Morales expressly discloses:

> That "[c]onsequently the conversion to electrical signals takes place only in the network terminating equipment to which the subscriber terminals are connected" (column 3, lines 63-65).

As a result of this statement in Morales, the Examiner concluded that:

> Therefore, it is obvious that the AN includes a plurality of optically pumped sources configured to form data modulated transmission light, and the conversion being performed without any intermediate conversion to or from an electrical signal.

In addition to declaring claim 1 obvious in light of Morales, the Examiner continued by stating that Takai discloses:

> … a similar optical transmission system, the access node or the remote node includes a plurality of optically pumped sources (e.g., 601-N in Figure 1, 13 in Figure 4, and Figure 6, and Figure 12 etc.) configured to form data modulated transmission light, and the conversion being formed without any intermediate conversion to or from an electrical signal (column 8, line 47 to column 9 line 8, Takai discloses: as the optical frequency conversion element, there are known (a) … (b) a frequency shifter in which optical signal and

> modulation light for frequency to be shifted are added to non-linear optical material simultaneously, (c) a frequency shifter using a polarizing rotation element, (d) an optical frequency conversion element having an optical filter for converting into an ASK (amplitude shift keying) signal and an optical frequency variable laser for converting into an FSK (frequency shift keying) signal, and (e) an optical frequency conversion element using four-light wave mixture. As the optical frequency selection and conversion element, there are known (a) an optical frequency conversion element using four-light wave mixture and (b) an integrated element having a combination of the optical frequency conversion element and a variable light filter using a laser. Any of them can be applied to the embodiment, while the optical frequency conversion element using four-light wave mixture is actually employed in the embodiment. The optical frequency conversion element using the four-light wave mixture has the same configuration as that described in FIG. 2 of paper by G. Grosskopf, R, Ludwig, H. G. Weber, "140 Mbit/s DPSK Transmission Using An All-Optical Frequency Converter With A 400 GHz conversion Range", Electronics Letters, Vol. 24, No. 17, pp. 1106-1107).

Further still, the Examiner found it necessary to cite to Ahn, which the Examiner states discloses:

> Ahn et al, also teaches direct wavelength converters (Figures 1-4), and the optically pumped sources (e.g., the SOA in Figure 1) including a laser cavity configured to form data modulated transmission light (e.g., λ_2) and the converting is performed without an intermediate conversion to or from an electrical signal, and wherein the data signal (e.g., λ_1) is optical.

Ultimately, the Examiner concluded:

> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the all-optical converter as taught by Takai et al and Ahn et al to the system of Morales et al so that a cost-effective and highly reliable and flexible network can be realized.

Claim 1 (as amended) is in independent form and recites an "optical data transmission system" comprising, in combination with other elements, "wherein each optically pumped source

of the plurality of optically pumped sources is configured to **receive injection light from an injection source outside the passive kerb location**". Claims 3 and 5-6 have been cancelled. Claims 4, 8 and 13-14 depend from independent claim 1 (as amended).

The "optical data transmission system" recited in independent claim 1 (as amended) would not have been obvious in view of Morales, alone or in any proper combination with Takai and Ahn under 35 USC 103(a). Morales, alone or in any proper combination with Takai and Ahn does not disclose, teach or suggest an "optical data transmission system" comprising, in combination with other elements, "wherein each optically pumped source of the plurality of optically pumped sources is configured to **receive injection light from an injection source outside the passive kerb location**". To transform the optical communications network of Morales, the optical frequency division multiplexing network of Takai and the optical data transmission system of Ahn into an "optical data transmission system" (as recited in claim 1) would require still further modification, and such modification is taught only by Applicants' own disclosure. The suggestion to make the combination of Morales, Takai and Ahn has been taken from the Applicants' own specification (using hindsight), which is improper.

Furthermore, Applicants respectfully submit that Takai actually teaches away from the subject matter recited in claim 1. Takai employs a control unit 11 with control signals to control the conversion elements (Figs. 1, 4, 6, 10, and 11A-B) at remote node 10, which would require supplying power to remote node 10. Claim 1 recites a passive kerb location. Indeed, one of the advantageous aspects of claim 1 is to provide a passive kerb location so as "not to require the supply of electricity" (Present Application, [0060]). Since remote node 10 of Takai requires power to operate control unit 11 and produce the corresponding control signals for the conversion elements, it would not have been obvious to use remote node 10 of Takai, which requires power, as the wholly passive kerb location of the present application. Therefore, Takai cannot be properly combined with Morales and Ahn in the rejection of claim 1.

However, even if the use of Takai were considered proper, the "optical data transmission system" recited in independent claim 1, considered as a whole, would not have been obvious in

view of Morales, Takai and/or Ahn. The rejection of claim 1 over Morales and Takai in view of Ahn under 35 USC 103(a) is improper. Therefore, claim 1 is patentable over Morales and Takai in view of Ahn.

Dependent claims 4, 8 and 13-14, which depend from independent claim 1, are also patentable for the same reasons as claim 1.

Applicants respectfully request withdrawal of the rejection of claims 1, 4, 8 and 13-14 under 35 USC 103(a).

Claims 16-19, 21-25 and 27-32

On page 8 of the Office Action, claims 16-19, 21-25 and 27-32 were rejected under 35 USC 103(a) as being unpatentable over a combination of four different references, namely Morales in view of Takai and Ahn and Kim et al., "A Low-Cost WDM Source with ASE Injected Fabry-Perot Semiconductor Laser," IEEE Photonics Technology letters, vol.12, no. 8, August 2000, p. 1067-69 (Kim).

The Examiner's arguments and support for the rejection of claim 16 are substantially similar to those recited above with respect to claim 1.

Additionally, with respect to claim 16, the Examiner again found it necessary to cite to another reference, Kim, which the Examiner states discloses:

> A plurality of injection locked sources (the F-P SLD in Figures 1 and 5) including a plurality of laser cavities (Fabry-Perot Laser Cavity in Figures 1 and 5) configured to select a resonance peak of light (the injection light from the broad-band source and AWG determine the appropriate resonance peak of the F-P laser, Figure 2).

Ultimately, the Examiner concluded:

> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the all-optical

converter as taught by Takai et al and Ahn et al and Kim to the system and method of Morales et al so that a cost-effective and highly reliable and flexible network can be realized.

Claim 16 (as amended) is in independent form and recites a "method of optically transmitting data" comprising, in combination with other elements, "receiving … injection light **from an injection source at a passive kerb location**". Claims 17-18, 22, 24-29 and 31 have been cancelled. Claims 21 and 23 depend from independent claim 16 (as amended).

The "method of optically transmitting data" recited in independent claim 16 (as amended) would not have been obvious in view of Morales, alone or in any proper combination with Takai, Ahn and Kim under 35 USC 103(a). Morales, alone or in any proper combination with Takai, Ahn and Kim does not disclose, teach or suggest a "method of optically transmitting data" comprising, in combination with other elements, "receiving … injection light **from an injection source at a passive kerb location**". To transform the optical communications network of Morales, the optical frequency division multiplexing network of Takai, the optical data transmission system of Ahn and the low-cost WDM source of Kim into a "method of optically transmitting data" (as recited in claim 16) would require still further modification, and such modification is taught only by Applicants' own disclosure. The suggestion to make the combination of Morales, Takai, Ahn and Kim has been taken from the Applicants' own specification (using hindsight), which is improper.

Furthermore, Applicants respectfully submit that the use of Takai in the rejection of claim 16 is improper for similar reasons as provided above with respect to claim 1.

However, even the use of Takai were considered proper, the "method of optically transmitting data" recited in independent claim 16, considered as a whole, would not have been obvious in view of Morales, Takai, Ahn and/or Kim. The rejection of claim 16 over Morales and Takai in view of Ahn and further in view of Kim under 35 USC 103(a) is improper. Therefore, claim 16 is patentable over claim Morales and Takai in view of Ahn and further in view of Kim.

Dependent claims 21 and 23, which depend from independent claim 16, are also patentable. See 35 USC 112, paragraph 4.

The Examiner's arguments, support and conclusion for the rejection of claim 19 are substantially similar to those recited above with respect to claim 16.

Claim 19 (as amended) is in independent form and recites an "optical data transmission system" comprising, in combination with other elements, "receiving means for receiving … injection light **from an injection source at a passive kerb location**". Claims 17-18, 22, 24-29 and 31 have been cancelled. Claims 30 and 32 depend from independent claim 19 (as amended).

The "optical data transmission system" recited in independent claim 19 (as amended) would not have been obvious in view of Morales, alone or in any proper combination with Takai, Ahn and Kim under 35 USC 103(a). Morales, alone or in any proper combination with Takai, Ahn and Kim does not disclose, teach or suggest an "optical data transmission system" comprising, in combination with other elements, "receiving means for receiving … injection light **from an injection source at a passive kerb location**". To transform the optical communications network of Morales, the optical frequency division multiplexing network of Takai, the optical data transmission system of Ahn and the low-cost WDM source of Kim into a "optical data transmission system" (as recited in claim 19) would require still further modification, and such modification is taught only by Applicants' own disclosure. The suggestion to make the combination of Morales, Takai, Ahn and Kim has been taken from the Applicants' own specification (using hindsight), which is improper.

Furthermore, Applicants respectfully submit that the use of Takai in the rejection of claim 19 is improper for the same reasons provided above with respect to claim 1.

However, even the use of Takai were considered proper, the "optical data transmission system" recited in independent claim 19, considered as a whole, would not have been obvious in view of Morales, Takai, Ahn and/or Kim. The rejection of claim 19 over Morales and Takai in

view of Ahn and further in view of Kim under 35 USC 103(a) is improper. Therefore, claim 19 is patentable over claim Morales and Takai in view of Ahn and further in view of Kim.

Dependent claims 30 and 32, which depend from independent claim 16, are also patentable. See 35 USC 112, paragraph 4.

Applicants respectfully request withdrawal of the rejection of claims 16, 19, 21, 23, 30 and 32 under 35 USC 103(a).

Claims 9, 10 and 15

On pages 25-26 of the Office Action, claims 9, 10 and 15 were rejected under 35 USC 103(a) as being unpatentable over a combination of four different references, namely Morales in view of Takai and Ahn and further in view of Kim.

Claims 9, 10 and 15 depend from independent claim 1 (as amended), and are also patentable for at least the same reasons cited above with respect to claim 1. See 35 USC 112, paragraph 4.

Applicants respectfully request withdrawal of the rejection of claims 9, 10 and 15 under 35 USC 103(a).

Claim 20

On page 27 of the Office Action, claim 20 was rejected under 35 USC 103(a) as being unpatentable over a combination of four different references, namely Morales in view of Takai and Ahn and further view of the Kim.

Claim 20 depends from independent claim 1 (as amended), and is also patentable for at least the same reasons cited above with respect to claim 1. See 35 USC 112, paragraph 4.

Applicants respectfully request withdrawal of the rejection of claim 20 under 35 USC 103(a).

Claim 11

On page 29 of the Office Action, claim 11 was rejected under 35 USC 103(a) as being unpatentable over a combination of four different references, namely Morales in view of Takai and Ahn and in further view of US Patent No. 6,434,175 (Zah).

Claim 11 depends from independent claim 1 (as amended), and is also patentable for at least the same reasons cited above with respect to claim 1. See 35 USC 112, paragraph 4.

Applicants respectfully request withdrawal of the rejection of claim 11 under 35 USC 103(a).

Claims 12 and 26

On page 30 of the Office Action, claims 12 and 26 were rejected under 35 USC 103(a) as being unpatentable over a combination of five different references, namely Morales in view of Takai and Ahn and Kim and in further view of Zah.

Claim 26 has been cancelled. Claim 12 depends from independent claim 1 (as amended), and is also patentable for at least the same reasons cited above with respect to claim 1. See 35 USC 112, paragraph 4.

Applicants respectfully request withdrawal of the rejection of claim 12 under 35 USC 103(a).

New claims 33-42

Claims 33 and 34 depend from claim 1 and are allowable for at least the same reasons as provided above with respect to claim 1.

Claim 35 is drafted in independent form and recites a "method of optically routing optical data at a passive kerb location from a first optical network unit and a second optical network unit to a hub" comprising, in combination with other elements, "routing the received first data

modulated pumping light via **a first upstream/downstream wavelength division multiplexer** to the first optically pumped source … routing the first data modulated transmission light from the first data modulated pumping source to a multiplexing element via **the first upstream/downstream wavelength division multiplexer**".

The "method of optically routing optical data at a passive kerb location from a first optical network unit and a second optical network unit to a hub" recited in independent claim 35 would not have been obvious in view of Morales, alone or in any proper combination with Takai, Ahn, Kim and Zah under 35 USC 103(a). Morales, alone or in any proper combination with Takai, Ahn, Kim and Zah does not disclose, teach or suggest a "method of optically routing optical data at a passive kerb location from a first optical network unit and a second optical network unit to a hub" comprising, in combination with other elements, "routing the received first data modulated pumping light via **a first upstream/downstream wavelength division multiplexer** to the first optically pumped source … routing the first data modulated transmission light from the first data modulated pumping source to a multiplexing element via **the first upstream/downstream wavelength division multiplexer**".

Therefore, claim 35 is patentable over claim Morales, alone or in any proper combination with Takai, Ahn and Zah.

Dependent claims 36-42, which depend from independent claim 35, are also patentable. See 35 USC 112, paragraph 4.

Applicants respectfully request allowance of claims 35-42.

* * *

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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